

# Work Order ID 134959

Wednesday, July 22, 2015 4:17:50 PM

**\*134959\***

Page 1

Item ID: 647.7714 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Strut Tube  
 Start Date: 7/22/15 Start Qty: 2.00 **\*2\*** Cust Item ID:  
 Required Date: 7/22/15 Req'd Qty: 2.00 **\*2\*** Customer:  
 Reference:

Approvals: Process Plan: MLS Date: JUL 23 2015 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

| Draw Nbr | Revision Nbr |
|----------|--------------|
| 647.7700 | A            |

110 0.00 2 0 SC.L 15/07/29  
**\*110\***

Mill Conv

Memo

0.00

Conventional Milling Machine

1- CUT AS PER DWG  
 2- Mill end of tube as per dwg  
 3- DEBURR AS PER DWG

120 0.00 2 0 SC.L 15/07/29  
**\*120\***

QC

Memo

0.00

Quality Control

QC2- Inspect parts off machine FAI/FAIB

125 0.00 2 0 SC.L 15/07/30 **DAS 08 9-89**  
**\*125\***

QC

Memo

0.00

Quality Control

QC8- Inspect parts - second check

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                      | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Step #:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MRB (QS1042) Approval                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Completed By                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| Root Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | FAULT CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Environment <input type="checkbox"/><br>Design <input type="checkbox"/><br>Doc/Data <input type="checkbox"/><br>Equip/Tooling <input type="checkbox"/><br>Handling/Pre <input type="checkbox"/><br>Material <input type="checkbox"/><br>Internal Transport <input type="checkbox"/><br>Tribal Knowledge <input type="checkbox"/><br>LOA <input type="checkbox"/><br>Substation <input type="checkbox"/><br>Past Expiry Date <input type="checkbox"/><br>Misidentified <input type="checkbox"/> | No Re-verification <input type="checkbox"/><br>Operator <input type="checkbox"/><br>Offset/Setup <input type="checkbox"/><br>Supplier <input type="checkbox"/><br>Training <input type="checkbox"/><br>Use for Testing <input type="checkbox"/><br>Poor Information <input type="checkbox"/><br>Rushing <input type="checkbox"/><br>Product Improvement <input type="checkbox"/><br>Process Improvement <input type="checkbox"/><br>Manufacturing Process <input type="checkbox"/><br>Past Due <input type="checkbox"/> | Pressure/Forced <input type="checkbox"/><br>Bending <input type="checkbox"/><br>Centre Not Concentric <input type="checkbox"/><br>Cracks <input type="checkbox"/><br>Crimp/Kink/Ripple/Wave <input type="checkbox"/><br>Cuffs <input type="checkbox"/><br>Crushing <input type="checkbox"/><br>Heat Treat <input type="checkbox"/><br>Wave/Twist in Tube <input type="checkbox"/><br>Marks/Chatter <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Temperature/Cure <input type="checkbox"/><br>Set-up <input type="checkbox"/><br>BOM/Route <input type="checkbox"/><br>Broken/Damage/Defect <input type="checkbox"/><br>Inspection Incomplete/Unqualified <input type="checkbox"/><br>Contamination <input type="checkbox"/><br>Countersink <input type="checkbox"/><br>Cut Too Short <input type="checkbox"/><br>Instructions Incomplete/Unclear <input type="checkbox"/><br>Drill Holes <input type="checkbox"/> | Power Loss/Surge <input type="checkbox"/><br>Folio/Program <input type="checkbox"/><br>Grain <input type="checkbox"/><br>Weld <input type="checkbox"/><br>Wrong Stock Pulled <input type="checkbox"/><br>Out of Sequence <input type="checkbox"/><br>Off-set <input type="checkbox"/><br>Misabeled <input type="checkbox"/><br>Fit/Function <input type="checkbox"/><br>Misaligned/off center <input type="checkbox"/> | Positioned Wrong <input type="checkbox"/><br>Outside Dimensions <input type="checkbox"/><br>Over/Under tolerance <input type="checkbox"/><br>Part Incorrect <input type="checkbox"/><br>Part Lost/Missing <input type="checkbox"/><br>Part Moved <input type="checkbox"/><br>Drawing <input type="checkbox"/><br>Finish <input type="checkbox"/><br>Misread <input type="checkbox"/><br>Turning Sequence <input type="checkbox"/> |
| OTHER : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |

Work Order ID 134959

\*134959\*

Page 2

Wednesday, July 22, 2015 4:17:50 PM

Item ID: 647.7714

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Strut Tube

Start Date: 7/22/15 Start Qty: 2.00 \*2\*

Cust Item ID:

Required Date: 7/22/15 Req'd Qty: 2.00 \*2\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

130 Identify as per dwg & Stock Location: ~~W~~ WA001 0.00

\*130\*

Packaging Memo 0.00

Packaging \*\*\*Stock in large fab\*\*\*  
WA001

② JA ~~DAB~~ 27 AUG 04 2015  
9-89

140 QC21- Final Inspection - Work Order Release 0.00

\*140\*

QC Memo 0.00

Quality Control

15/8/16 *[Signature]*  
*[Signature]* 20150805

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                      | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Step #:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MRB (QS1042) Approval                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Completed By                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| Root Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | FAULT CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Environment <input type="checkbox"/><br>Design <input type="checkbox"/><br>Doc/Data <input type="checkbox"/><br>Equip/Tooling <input type="checkbox"/><br>Handling/Pre <input type="checkbox"/><br>Material <input type="checkbox"/><br>Internal Transport <input type="checkbox"/><br>Tribal Knowledge <input type="checkbox"/><br>LOA <input type="checkbox"/><br>Substation <input type="checkbox"/><br>Past Expiry Date <input type="checkbox"/><br>Misidentified <input type="checkbox"/> | No Re-verification <input type="checkbox"/><br>Operator <input type="checkbox"/><br>Offset/Setup <input type="checkbox"/><br>Supplier <input type="checkbox"/><br>Training <input type="checkbox"/><br>Use for Testing <input type="checkbox"/><br>Poor Information <input type="checkbox"/><br>Rushing <input type="checkbox"/><br>Product Improvement <input type="checkbox"/><br>Process Improvement <input type="checkbox"/><br>Manufacturing Process <input type="checkbox"/><br>Past Due <input type="checkbox"/> | Pressure/Forced <input type="checkbox"/><br>Bending <input type="checkbox"/><br>Centre Not Concentric <input type="checkbox"/><br>Cracks <input type="checkbox"/><br>Crimp/Kink/Ripple/Wave <input type="checkbox"/><br>Cuffs <input type="checkbox"/><br>Crushing <input type="checkbox"/><br>Heat Treat <input type="checkbox"/><br>Wave/Twist in Tube <input type="checkbox"/><br>Marks/Chatter <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Temperature/Cure <input type="checkbox"/><br>Set-up <input type="checkbox"/><br>BOM/Route <input type="checkbox"/><br>Broken/Damage/Defect <input type="checkbox"/><br>Inspection Incomplete/Unqualified <input type="checkbox"/><br>Contamination <input type="checkbox"/><br>Countersink <input type="checkbox"/><br>Cut Too Short <input type="checkbox"/><br>Instructions Incomplete/Unclear <input type="checkbox"/><br>Drill Holes <input type="checkbox"/> | Power Loss/Surge <input type="checkbox"/><br>Folio/Program <input type="checkbox"/><br>Grain <input type="checkbox"/><br>Weld <input type="checkbox"/><br>Wrong Stock Pulled <input type="checkbox"/><br>Out of Sequence <input type="checkbox"/><br>Off-set <input type="checkbox"/><br>Misabeled <input type="checkbox"/><br>Fit/Function <input type="checkbox"/><br>Misaligned/off center <input type="checkbox"/> | Positioned Wrong <input type="checkbox"/><br>Outside Dimensions <input type="checkbox"/><br>Over/Under tolerance <input type="checkbox"/><br>Part Incorrect <input type="checkbox"/><br>Part Lost/Missing <input type="checkbox"/><br>Part Moved <input type="checkbox"/><br>Drawing <input type="checkbox"/><br>Finish <input type="checkbox"/><br>Misread <input type="checkbox"/><br>Turning Sequence <input type="checkbox"/> |
| OTHER : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |

# Picklist Print

Wednesday, July 22, 2015 4:17:50 PM

Page 1

Work Order ID: 134959

**\*134959\***

Parent Item: 647.7714

**\*647 7714\***

Parent Item Name: Strut Tube

Start Date: 7/22/15

Required Date: 7/22/15

Start Qty: 2.00

Required Qty: 2.00

Comments: IPP REV:A 15.01.07 NEW ISSUE DD VERF:JLM

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
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M4130NT0.500W.083

Purchased

No

f

4.3020

1.263158

**\*M4130NT0 500W 083\***

**\*\***

4130 RD tube .500 x .083W

Location

Loc Qty

Loc Code

MAT032

4.302

124293

4.302

3.604 J.C.L. 15/07/29

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube <input type="checkbox"/></td> <td style="border: none;">Cross tube <input type="checkbox"/></td> <td style="border: none;">Water Jet <input type="checkbox"/></td> <td style="border: none;">Engineering <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Machining <input type="checkbox"/></td> <td style="border: none;">Small Fab <input type="checkbox"/></td> <td style="border: none;">Prod. Eng. Coord. <input type="checkbox"/></td> <td style="border: none;">Quality <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Thermoforming <input type="checkbox"/></td> <td style="border: none;">Finishing <input type="checkbox"/></td> <td style="border: none;">Rec/Store/Packaging <input type="checkbox"/></td> <td style="border: none;">Other <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Large Fab <input type="checkbox"/></td> <td style="border: none;">Composite <input type="checkbox"/></td> <td style="border: none;">Supplier <input type="checkbox"/></td> <td></td> </tr> </table> |                                                 |                                          |                                 | Skid-tube <input type="checkbox"/> | Cross tube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/>  | Machining <input type="checkbox"/>             | Small Fab <input type="checkbox"/>     | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/>    | Other <input type="checkbox"/>    | Large Fab <input type="checkbox"/>       | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/>           |                                           |                                   |                                           |                                  |                                     |                              |                                              |                                             |                                     |                                              |                                        |                                           |                                                |  |                                        |                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |                                           |                                           |                                           |                                 |                                        |                                             |                                    |                                |                                               |                                               |                               |                                         |                                                            |                                             |                                            |                                        |                                          |                                     |                                      |                                  |                                  |                                        |                                     |                                 |                                                          |                                       |                                  |                                      |                                                |                                           |
| Skid-tube <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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| Machining <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. 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| Thermoforming <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| <b>Root Cause</b><br><table style="width:100%; border: none;"> <tr> <td style="border: none;">Environment <input type="checkbox"/></td> <td style="border: none;">No Re-verification <input type="checkbox"/></td> <td style="border: none;">Pressure/Forced <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Design <input type="checkbox"/></td> <td style="border: none;">Operator <input type="checkbox"/></td> <td style="border: none;">Bending <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Doc/Data <input type="checkbox"/></td> <td style="border: none;">Offset/Setup <input type="checkbox"/></td> <td style="border: none;">Centre Not Concentric <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Equip/Tooling <input type="checkbox"/></td> <td style="border: none;">Supplier <input type="checkbox"/></td> <td style="border: none;">Cracks <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Handling/Pre <input type="checkbox"/></td> <td style="border: none;">Training <input type="checkbox"/></td> <td style="border: none;">Crimp/Kink/Ripple/Wave <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Material <input type="checkbox"/></td> <td style="border: none;">Use for Testing <input type="checkbox"/></td> <td style="border: none;">Cuffs <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Internal Transport <input type="checkbox"/></td> <td style="border: none;">Poor Information <input type="checkbox"/></td> <td style="border: none;">Crushing <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Tribal Knowledge <input type="checkbox"/></td> <td style="border: none;">Rushing <input type="checkbox"/></td> <td style="border: none;">Heat Treat <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">LOA <input type="checkbox"/></td> <td style="border: none;">Product Improvement <input type="checkbox"/></td> <td style="border: none;">Wave/Twist in Tube <input 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<input type="checkbox"/> | Process Improvement <input type="checkbox"/> | Marks/Chatter <input type="checkbox"/> | Past Expiry Date <input type="checkbox"/> | Manufacturing Process <input type="checkbox"/> |  | Misidentified <input type="checkbox"/> | Past Due <input type="checkbox"/> |  | <b>FAULT CATEGORY</b><br><table style="width:100%; border: none;"> <tr> <td style="border: none;">Temperature/Cure <input type="checkbox"/></td> <td style="border: none;">Power Loss/Surge <input type="checkbox"/></td> <td style="border: none;">Positioned Wrong <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">Set-up <input type="checkbox"/></td> <td style="border: none;">Folio/Program <input type="checkbox"/></td> <td style="border: none;">Outside Dimensions <input type="checkbox"/></td> </tr> <tr> <td style="border: none;">BOM/Route <input type="checkbox"/></td> <td style="border: none;">Grain <input type="checkbox"/></td> <td style="border: none;">Over/Under tolerance <input 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Broken/Damage/Defect <input type="checkbox"/> | Weld <input type="checkbox"/> | Part Incorrect <input type="checkbox"/> | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/> | Part Lost/Missing <input type="checkbox"/> | Contamination <input type="checkbox"/> | Out of Sequence <input type="checkbox"/> | Part Moved <input type="checkbox"/> | Countersink <input type="checkbox"/> | Off-set <input type="checkbox"/> | Drawing <input type="checkbox"/> | Cut Too Short <input type="checkbox"/> | Mislabeled <input type="checkbox"/> | Finish <input type="checkbox"/> | Instructions Incomplete/Unclear <input type="checkbox"/> | Fit/Function <input type="checkbox"/> | Misread <input type="checkbox"/> | Drill Holes <input type="checkbox"/> | Misaligned/off center <input type="checkbox"/> | Turning Sequence <input type="checkbox"/> |
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| Equip/Tooling <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Handling/Pre <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Material <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| Internal Transport <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| Tribal Knowledge <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| LOA <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| Substation <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| Past Expiry Date <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Misidentified <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Temperature/Cure <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Set-up <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| BOM/Route <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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| Broken/Damage/Defect <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| Inspection Incomplete/Unqualified <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| Contamination <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Countersink <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Off-set <input type="checkbox"/>                                                                                                                                                   | Drawing <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                 |                                          |                                 |                                    |                                     |                                    |                                       |                                                |                                        |                                            |                                  |                                        |                                    |                                                 |                                   |                                          |                                    |                                             |                                           |                                   |                                           |                                  |                                     |                              |                                              |                                             |                                     |                                              |                                        |                                           |                                                |  |                                        |                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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              |                               |                                         |                                                            |                                             |                                            |                                        |                                          |                                     |                                      |                                  |                                  |                                        |                                     |                                 |                                                          |                                       |                                  |                                      |                                                |                                           |
| Cut Too Short <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mislabeled <input type="checkbox"/>                                                                                                                                                | Finish <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                 |                                          |                                 |                                    |                                     |                                    |                                       |                                                |                                        |                                            |                                  |                                        |                                    |                                                 |                                   |                                          |                                    |                                             |                                           |                                   |                                           |                                  |                                     |                              |                                              |                                             |                                     |                                              |                                        |                                           |                                                |  |                                        |                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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              |                               |                                         |                                                            |                                             |                                            |                                        |                                          |                                     |                                      |                                  |                                  |                                        |                                     |                                 |                                                          |                                       |                                  |                                      |                                                |                                           |
| Instructions Incomplete/Unclear <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Fit/Function <input type="checkbox"/>                                                                                                                                              | Misread <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                 |                                          |                                 |                                    |                                     |                                    |                                       |                                                |                                        |                                            |                                  |                                        |                                    |                                                 |                                   |                                          |                                    |                                             |                                           |                                   |                                           |                                  |                                     |                              |                                              |                                             |                                     |                                              |                                        |                                           |                                                |  |                                        |                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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              |                               |                                         |                                                            |                                             |                                            |                                        |                                          |                                     |                                      |                                  |                                  |                                        |                                     |                                 |                                                          |                                       |                                  |                                      |                                                |                                           |
| Drill Holes <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Misaligned/off center <input type="checkbox"/>                                                                                                                                     | Turning Sequence <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                 |                                          |                                 |                                    |                                     |                                    |                                       |                                                |                                        |                                            |                                  |                                        |                                    |                                                 |                                   |                                          |                                    |                                             |                                           |                                   |                                           |                                  |                                     |                              |                                              |                                             |                                     |                                              |                                        |                                           |                                                |  |                                        |                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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              |                               |                                         |                                                            |                                             |                                            |                                        |                                          |                                     |                                      |                                  |                                  |                                        |                                     |                                 |                                                          |                                       |                                  |                                      |                                                |                                           |
| OTHER : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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            |                                              |                                        |                                           |                                                |  |                                        |                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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              |                               |                                         |                                                            |                                             |                                            |                                        |                                          |                                     |                                      |                                  |                                  |                                        |                                     |                                 |                                                          |                                       |                                  |                                      |                                                |                                           |



# APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.

04741

SHEET 1 OF 1

DWG NO. 647.7700

REV: NC

PREPARED BY J. SOTO

DATE: 11/13/2014

EFFECT ON DWG  
☒ INC. ☐ UNINC.

DWG TITLE: STRUT ASSY

APPROVED BY:

ENGR

*[Signature]*

MFG

*[Signature]*

QC

*[Signature]*

EFF.

NEXT ORDER

TRANSACTION CODES (TC):  
 A-ADD C-CREATE  
 R-REVISE D-DELETE

REASON: CREATED NEW CONFIGURATION. ADDED F/N 5.

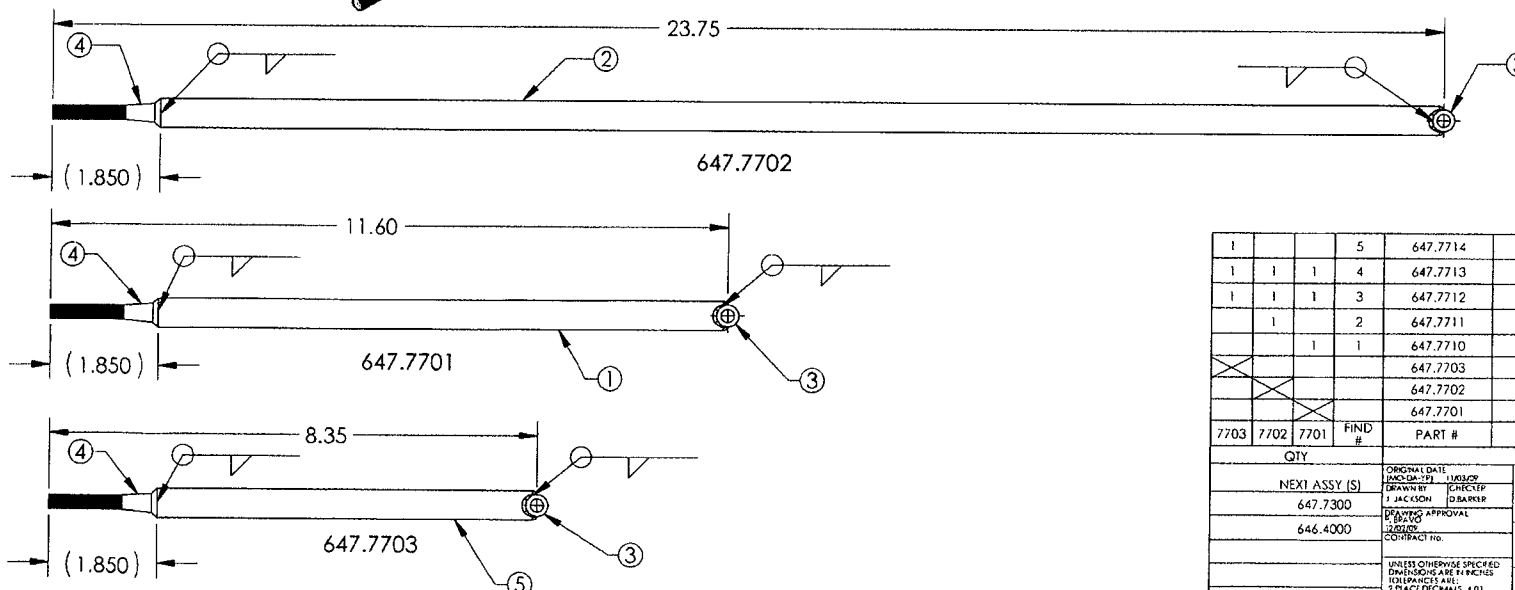
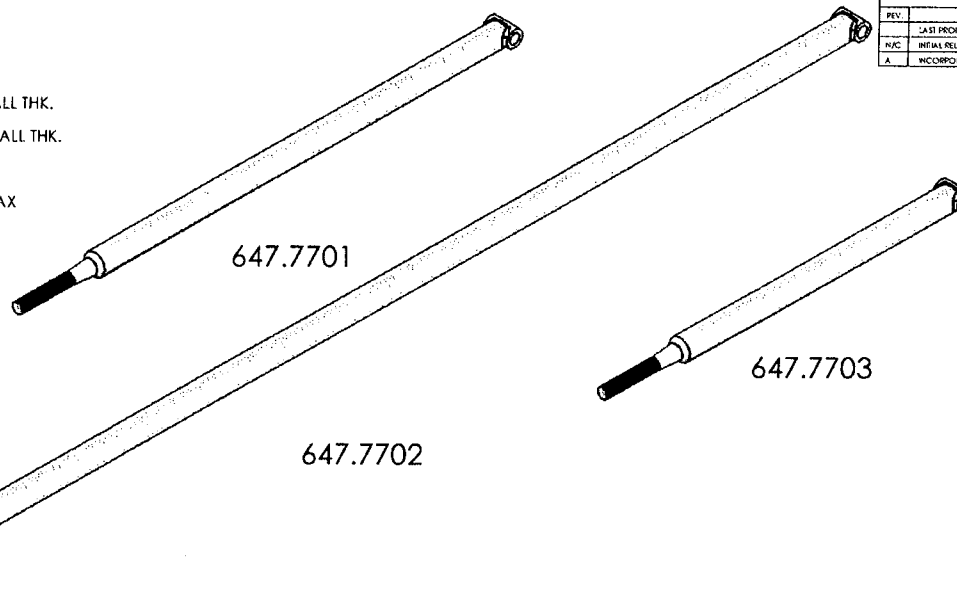
134959ML5  
 15-07-23

|                                                                                                                                                                              |    |             |       |              |                                                                          |                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|-------|--------------|--------------------------------------------------------------------------|---------------------------------------------------------------------|
| 5                                                                                                                                                                            | A  | 647.7714    | 1     | STRUT TUBE   | △1                                                                       |                                                                     |
| 4                                                                                                                                                                            | R  | 647.7713    | 1     | STRUT THREAD | △3                                                                       | △6                                                                  |
| 3                                                                                                                                                                            | R  | 647.7712    | 1     | STRUT TUBE   | △2                                                                       |                                                                     |
|                                                                                                                                                                              | C  | 647.7703    | X     | STRUT ASSY   |                                                                          |                                                                     |
| F/N                                                                                                                                                                          | TC | PART NUMBER | .7703 |              |                                                                          |                                                                     |
|                                                                                                                                                                              |    | QTY         |       | DESCRIPTION  | MATERIAL                                                                 | SPECIFICATION                                                       |
| DOCUMENTS EFFECTED:                                                                                                                                                          |    |             |       |              | CHANGE CATEGORY                                                          | DER REVIEW REQUIRED                                                 |
| <input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRUCTIONS <input type="checkbox"/> ICA <input type="checkbox"/> FMS <input checked="" type="checkbox"/> BOM |    |             |       |              | <input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |



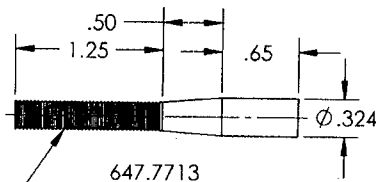
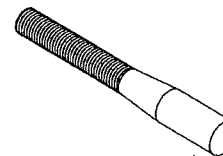
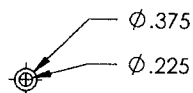
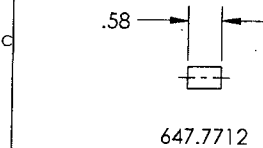
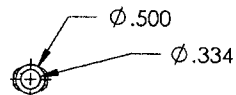
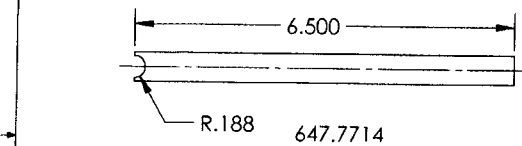
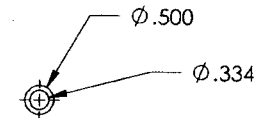
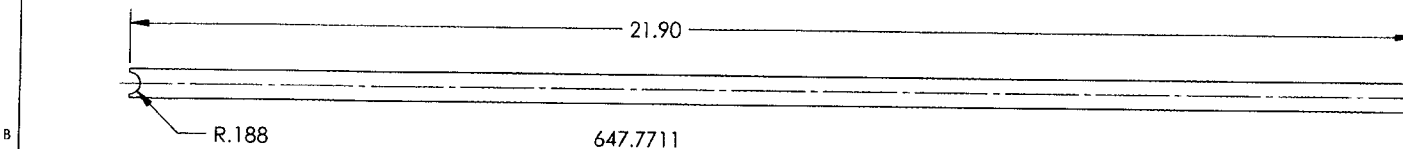
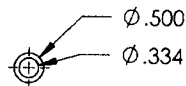
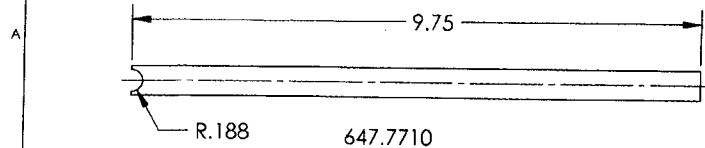
1. MATERIAL: 4130 STEEL PER AMS-T-6736, .50" OD, .083" WALL THK.
  2. MATERIAL: 4130 STEEL PER AMS-T-6736, .375" OD, .075" WALL THK.
  3. MATERIAL: 4130 STEEL PER AMS-T-6736, .324" OD.
  4. FINISH: PRIME IAW MIL-P-2337J TYPE I CLASS N; 1-2 MIL MAX
  5. DEBURR AND BREAK ALL SHARP EDGES
  6. IDENTIFY IAW MPP-120.
- WELD IAW MIL-STD-2219. TIG WELD WITH FILLER ROD
- FINISH: CAD PLATE IAW MIL-C-5541 CLASS 1A
- MASK THREAD PRIOR TO FINISH

| REVISIONS |                              |          |          |
|-----------|------------------------------|----------|----------|
| REV.      | DESCRIPTION                  | DATE     | APPROVED |
|           | LAST PROTOTYPE REVISION: PP2 |          | N/C      |
| N/C       | INITIAL RELEASE              | 12/02/09 | P. BRAVO |
| A         | INCORPORATED FCN 04741       | 11/13/14 | P. BRAVO |



|               |      |      |                                                                  |              |             |             |
|---------------|------|------|------------------------------------------------------------------|--------------|-------------|-------------|
| 1             |      | 5    | 647.7714                                                         | STRUT TUBE   | △           |             |
| 1             | 1    | 4    | 647.7713                                                         | STRUT THREAD | △           | △           |
| 1             | 1    | 3    | 647.7712                                                         | STRUT TUBE   | △           |             |
|               | 1    | 2    | 647.7711                                                         | STRUT TUBE   | △           |             |
|               | 1    | 1    | 647.7710                                                         | STRUT TUBE   | △           |             |
|               |      |      | 647.7703                                                         | STRUT ASSY   |             | △ △         |
|               |      |      | 647.7702                                                         | STRUT ASSY   |             | △ △         |
|               |      |      | 647.7701                                                         | STRUT ASSY   |             | △ △         |
| 7703          | 7702 | 7701 | FIND #                                                           | PART #       | DESCRIPTION | MAT'L SPEC. |
| QTY.          |      |      | PARTS LIST                                                       |              |             |             |
| NEXT ASSY (S) |      |      | APICAL INDUSTRIES                                                |              |             |             |
| 647.7300      |      |      | 2608 TEMPLE HEIGHTS DR.                                          |              |             |             |
| 646.4000      |      |      | OCEANSIDE, CA. 92056-3512 (760)724-5300                          |              |             |             |
|               |      |      | STRUT ASSY                                                       |              |             |             |
|               |      |      | ME CASH CODE DWD NO. 647.7700 FIN A<br>SCALE NONE L SHEET 1 OF 2 |              |             |             |

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.



1/4 - 28 THREAD

|                                                                                                                                            |                      |                                                                                                |                      |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------|----------------------|
| ORIGINAL DATE<br>11/10/89                                                                                                                  |                      | <b>APICAL INDUSTRIES</b><br>2608 TEMPLE HEIGHTS DR.<br>OCEANSIDE, CA. 92056-3512 (760)724-5300 |                      |
| DRAWN BY<br>J. JACKSON                                                                                                                     | CHECKED<br>D. BARTER |                                                                                                |                      |
| DRAWING APPROVAL<br>P. BRAVO                                                                                                               |                      |                                                                                                |                      |
| CONTRACT NO.                                                                                                                               |                      |                                                                                                |                      |
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE:<br>2 PLACE DECIMALS ±.01<br>3 PLACE DECIMALS ±.005<br>ANGLES ±.5 |                      | SHEET CODE<br>07M26                                                                            | DWG. NO.<br>647.7700 |
| SCALE: NONE                                                                                                                                |                      | REV. A                                                                                         |                      |
|                                                                                                                                            |                      | SHEET 2 OF 2                                                                                   |                      |